



**TCDS No A-15**  
**Revision 3**  
**Alpha Aviation Concept Ltd**  
**HR200-100**  
**HR200-120**  
**HR200-120B**  
**HR200-160**  
**HR200-100S**  
**R2160**  
**R2100**  
**R2100A**  
**R2160D**  
**R2112**  
**R2160i**  
**R2120U**  
**5 February 2010**

**TYPE CERTIFICATE DATA SHEET No A-15**

This data sheet which is part of Type Certificate No A-15 prescribes the conditions and limitations under which the product for which the Type Certificate was issued meets the airworthiness requirements of the New Zealand Civil Aviation Rules.

Type Certificate Holder :	<b>Alpha Aviation Concept Ltd</b>
(Since 5 February 2010)	<b>Hamilton</b>
	<b>New Zealand</b>
Previous Type Certificate Holder:	<b>Alpha Aviation Design Ltd</b>
(16 June 2006 to 5 February 2010)	<b>Hamilton,</b>
	<b>New Zealand</b>

**I - Model HR200-100 (Utility Category) Approved 13.09.1973**

<u>Engine:</u>	Lycoming O-235-H2C (E-223)								
<u>Fuel:</u>	80/87 minimum aviation grade gasoline								
<u>Engine Limits:</u>	For all operations 2600 rpm (108 HP)								
<u>Propeller:</u>	1. McCauley: 1A 105/BCM-70-56 (P-918) 2. Hoffmann: HO-14-178/115 (LBA 32.110/001)								
<u>Propeller Limits:</u>	Minimum Static RPM @ sea level <span style="float: right;">2300</span> McCauley: Diameter 1.78m (70") Minimum 1.70m (67") Hoffmann: Diameter 1.78m (70") minimum 1.73m (68")								
<u>Airspeed Limits:</u>	<table border="0" style="width: 100%;"> <tr> <td>V<sub>NE</sub> Never exceed</td> <td>160 kts (296 km/h)IAS</td> </tr> <tr> <td>V<sub>NO</sub> Max. structural cruising</td> <td>131 kts (242 km/h)IAS</td> </tr> <tr> <td>V<sub>A</sub> Maneuvering</td> <td>131 kts (242 km/h)IAS</td> </tr> <tr> <td>V<sub>FE</sub> Max Flap Extended</td> <td>96 kts (176 km/h)IAS</td> </tr> </table>	V <sub>NE</sub> Never exceed	160 kts (296 km/h)IAS	V <sub>NO</sub> Max. structural cruising	131 kts (242 km/h)IAS	V <sub>A</sub> Maneuvering	131 kts (242 km/h)IAS	V <sub>FE</sub> Max Flap Extended	96 kts (176 km/h)IAS
V <sub>NE</sub> Never exceed	160 kts (296 km/h)IAS								
V <sub>NO</sub> Max. structural cruising	131 kts (242 km/h)IAS								
V <sub>A</sub> Maneuvering	131 kts (242 km/h)IAS								
V <sub>FE</sub> Max Flap Extended	96 kts (176 km/h)IAS								

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Revision	3	0	0	0	0	0	0	0	0	3	0	0	0
Page	14	15	16	17	18	19	20	21	22				
Revision	0	0	0	1	1	3	3	0	3				

<u>Design Limit Load Factors</u>	Flaps up	+4.4	
		-1.8	
	Flaps down	+2	
		-0	
<u>C.G. Range:</u>	Forward limit: 0.22 m @ 580 kgs (8.7" @ 1278 lbs) Intermediate limit: 0.32 m @ 780 kg (12.6" @ 1720 lbs). Aft Limit: 0.46 m @ 780 kg (18.1" @ 1720 lbs)  Straight line variation between points given.		
<u>Empty Weight C.G. Range:</u>	None.		
<u>Datum:</u>	Wing leading edge rib No. 5.		
<u>Leveling means:</u>	Fuselage upper longeron (longitudinal) and seat back frame (lateral).		
<u>Maximum Weight:</u>	Maximum Take-off:	780 kgs (1720 lbs)	
	Maximum Landing:	780 kgs (1720 lbs)	
<u>Minimum Crew:</u>	One		
<u>Number of seats:</u>	Two at Station +0.45 m (+ 17.7")		
<u>Maximum Baggage:</u>	35 kg @ +1.20 m (+ 47.2").		
<u>Fuel Capacity:</u>	Total:	120 litres (31.7 US gal)	
	Useable:	118 litres (31 US gal)	
<u>Oil Capacity:</u>	5.7 litres ( 6 US qts).		
<u>Control Surface Movements:</u>	Stabilator:	Up	10°±0.5°
		Down	12.5°± 0.5 °
	Stabilator up tab:	Up	33.5°± 3°
		Down	5°± 3°
	Stabilator down tab:	Up	14°± 3°
		Down	22°± 3°
	Rudder relative to fin:	Right	30°+ 0°
			- 3°
		Left	30° +0°
			- 3°
	Ailerons relative to wing:	Up	18°± 1.5°
		Down	12°± 1.5°
	Flaps relative to wing:	Up	0°
		Take-off	10°± 2.5°
Landing		30°± 2.5°	
<u>Flight Manual</u>	CAA Approved Flight Manual AIR 2960 (See Note 8)		
<u>Serial Numbers Eligible:</u>	001 through 378 (See Note 5)		

**II - Model HR200-120 (Utility Category) Approved 25.01.1974**

This model is identical to the HR200-100 except it is fitted with a Lycoming O-235-J2A engine.

<u>Engine:</u>	Lycoming O-235-J2A (E-223)								
<u>Fuel:</u>	100LL minimum aviation grade gasoline								
<u>Engine Limits:</u>	For all operations 2800 rpm (125 HP)								
<u>Propeller:</u>	1. McCauley 1A 135/JCM-71-54 (P-842)								
<u>Propeller Limits:</u>	Minimum Static RPM @ sea level 2300 McCauley: Diameter 1.80m (71") Minimum 1.80m (71") No reduction permitted. Do not operate between 2025 and 2325 rpm continuously when throttle is reduced by more than ¼ (especially during descent).								
<u>Airspeed Limits:</u>	<table> <tr> <td>V<sub>NE</sub> Never exceed</td> <td>160 kts (296 km/h)IAS</td> </tr> <tr> <td>V<sub>NO</sub> Max. structural cruising</td> <td>131 kts (242 km/h)IAS</td> </tr> <tr> <td>V<sub>A</sub> Maneuvering</td> <td>131 kts (242 km/h)IAS</td> </tr> <tr> <td>V<sub>FE</sub> Max Flap Extended</td> <td>96 kts (176 km/h)IAS</td> </tr> </table>	V <sub>NE</sub> Never exceed	160 kts (296 km/h)IAS	V <sub>NO</sub> Max. structural cruising	131 kts (242 km/h)IAS	V <sub>A</sub> Maneuvering	131 kts (242 km/h)IAS	V <sub>FE</sub> Max Flap Extended	96 kts (176 km/h)IAS
V <sub>NE</sub> Never exceed	160 kts (296 km/h)IAS								
V <sub>NO</sub> Max. structural cruising	131 kts (242 km/h)IAS								
V <sub>A</sub> Maneuvering	131 kts (242 km/h)IAS								
V <sub>FE</sub> Max Flap Extended	96 kts (176 km/h)IAS								
<u>Design Limit Load Factors</u>	<table> <tr> <td>Flaps up</td> <td>+4.4</td> </tr> <tr> <td></td> <td>-1.8</td> </tr> <tr> <td>Flaps down</td> <td>+2</td> </tr> <tr> <td></td> <td>-0</td> </tr> </table>	Flaps up	+4.4		-1.8	Flaps down	+2		-0
Flaps up	+4.4								
	-1.8								
Flaps down	+2								
	-0								
<u>C.G. Range:</u>	Forward limit: 0.22 m @ 580 kgs (8.7" @ 1278 lbs) Intermediate limit: 0.32 m @ 780 kg (12.6" @ 1720 lbs). Aft Limit: 0.46 m @ 780 kg (18.1" @ 1720 lbs)  Straight line variation between points given.								
<u>Empty Weight C.G. Range:</u>	None.								
<u>Datum:</u>	Wing leading edge rib No. 5.								
<u>Leveling means:</u>	Fuselage upper longeron (longitudinal) and seat back frame (lateral).								
<u>Maximum Weight:</u>	Maximum Take-off: 780 kgs (1720 lbs) Maximum Landing: 780 kgs (1720 lbs)								
<u>Minimum Crew:</u>	One								
<u>Number of seats:</u>	Two at Station +0.45 m (+ 17.7")								
<u>Maximum Baggage:</u>	35 kg @ +1.20 m (+ 47.2").								
<u>Fuel Capacity:</u>	Total: 120 litres (31.7 US gal) Useable: 118 litres (31 US gal)								

<u>Oil Capacity:</u>	5.7 litres ( 6 US qts).		
<u>Control Surface Movements:</u>	Stabilator:	Up	10°±0.5°
		Down	12.5°± 0.5 °
	Stabilator up tab:	Up	33.5°± 3°
		Down	5°± 3°
	Stabilator down tab:	Up	14°± 3°
		Down	22°± 3°
	Rudder relative to fin:	Right	30°+ 0°
			- 3°
		Left	30° +0°
			- 3°
	Ailerons relative to wing:	Up	18°± 1.5°
		Down	12°± 1.5°
	Flaps relative to wing:	Up	0°
Take-off		10°± 2.5°	
Landing		30°± 2.5°	
If modification 17 installed		Landing	20°± 2.5°

Flight Manual CAA Approved Flight Manual AIR 2962 (See Note 8)

Serial Numbers Eligible: 001 through 378 (See Note 5)

### **III - Model HR200-120B (Utility Category) Approved 17.12.1974**

This model is identical to the HR200-120 except it is fitted with a Lycoming O-235-L2A engine, stabilator modification Nr 10 and has disc brakes.

Engine: Lycoming O-235-L2A (E-223)

Fuel: 100LL minimum aviation grade gasoline

Engine Limits: For all operations 2800 rpm (118 HP)

Propeller:

1. McCauley 1A 135/JCM-71-47 (P-842)
2. Hoffmann HO-14-178/115 (LBA 32.110/001)

Propeller Limits: Minimum Static RPM @ sea level 2250  
 McCauley: Diameter 1.80m (71") Minimum 1.77m (69.7")  
 Do not operate between 2025 and 2325 rpm continuously when throttle is reduced by more than ¼ (especially during descent).  
 Hoffmann: Diameter 1.78m (70") minimum 1.73m (68")

Airspeed Limits:

V <sub>NE</sub> Never exceed	160 kts (296 km/h)IAS
V <sub>NO</sub> Max. structural cruising	131 kts (242 km/h)IAS
V <sub>A</sub> Maneuvering	131 kts (242 km/h)IAS
V <sub>FE</sub> Max Flap Extended	96 kts (176 km/h)IAS

Design Limit Load Factors

Flaps up	+4.4
	-1.8
Flaps down	+2
	-0

<u>C.G. Range:</u>	Forward limit: 0.22 m @ 580 kgs (8.7" @ 1278 lbs) Intermediate limit: 0.32 m @ 780 kg (12.6" @ 1720 lbs). Aft Limit: 0.46 m @ 780 kg (18.1" @ 1720 lbs)  Straight line variation between points given.		
<u>Empty Weight C.G. Range:</u>	None.		
<u>Datum:</u>	Wing leading edge rib No. 5.		
<u>Leveling means:</u>	Fuselage upper longeron (longitudinal) and seat back frame (lateral).		
<u>Maximum Weight:</u>	Maximum Take-off: 780 kgs (1720 lbs) Maximum Landing: 780 kgs (1720 lbs)		
<u>Minimum Crew:</u>	One		
<u>Number of seats:</u>	Two at Station +0.45 m (+ 17.7")		
<u>Maximum Baggage:</u>	35 kg @ +1.20 m (+ 47.2").		
<u>Fuel Capacity:</u>	Total: 120 litres (31.7 US gal) Useable: 118 litres (31 US gal)		
<u>Oil Capacity:</u>	5.7 litres ( 6 US qts).		
<u>Control Surface Movements:</u>	Stabilator:	Up	10°±0.5°
		Down	12.5°± 0.5 °
	Stabilator up tab:	Up	33.5°± 3°
		Down	5°± 3°
	Stabilator down tab:	Up	14°± 3°
		Down	22°± 3°
	Rudder relative to fin:	Right	30°+ 0°
			- 3°
		Left	30° +0°
			- 3°
	Ailerons relative to wing:	Up	18°± 1.5°
		Down	12°± 1.5°
	Flaps relative to wing:	Up	0°
		Take-off	10°± 2.5°
		Landing	30°± 2.5°
	If modification 17 installed	Landing	20°± 2.5°
<u>Flight Manual</u>	CAA Approved Flight Manual AIR 2963 (Serial numbers up to 249) CAA Approved Flight Manual AIR 2964 (Serial numbers 250 to 378) (See Note 8)		
<u>Serial Numbers Eligible:</u>	001 through 378 (See Note 5)		

**IV - Model HR200-160 (Utility Category) Approved 28.04.1975**

This model is identical to the HR200-100 except it is fitted with a Lycoming O-320-D engine, stabilator modification Nr 10 and has disc brakes.

<u>Engine:</u>	Lycoming O-320-D (E-274)								
<u>Fuel:</u>	91/96 or 100/130 minimum aviation grade gasoline								
<u>Engine Limits:</u>	For all operations 2700 rpm (160 HP)								
<u>Propeller:</u>	Sensenich 74DM6S5-2-66 (P-886) or M74DMS-2-66								
<u>Propeller Limits:</u>	Minimum Static RPM @ sea level 2150 Diameter 1.83m (72") Minimum 1.83m (72") No reduction permitted.								
<u>Airspeed Limits:</u>	<table> <tr> <td>V<sub>NE</sub> Never exceed</td> <td>161 kts (298 km/h)IAS</td> </tr> <tr> <td>V<sub>NO</sub> Max. structural cruising</td> <td>131 kts (242 km/h)IAS</td> </tr> <tr> <td>V<sub>A</sub> Maneuvering</td> <td>131 kts (242 km/h)IAS</td> </tr> <tr> <td>V<sub>FE</sub> Max Flap Extended</td> <td>96 kts (176 km/h)IAS</td> </tr> </table>	V <sub>NE</sub> Never exceed	161 kts (298 km/h)IAS	V <sub>NO</sub> Max. structural cruising	131 kts (242 km/h)IAS	V <sub>A</sub> Maneuvering	131 kts (242 km/h)IAS	V <sub>FE</sub> Max Flap Extended	96 kts (176 km/h)IAS
V <sub>NE</sub> Never exceed	161 kts (298 km/h)IAS								
V <sub>NO</sub> Max. structural cruising	131 kts (242 km/h)IAS								
V <sub>A</sub> Maneuvering	131 kts (242 km/h)IAS								
V <sub>FE</sub> Max Flap Extended	96 kts (176 km/h)IAS								
<u>Design Limit Load Factors</u>	<table> <tr> <td>Flaps up</td> <td>+4.4</td> </tr> <tr> <td></td> <td>-1.8</td> </tr> <tr> <td>Flaps down</td> <td>+2</td> </tr> <tr> <td></td> <td>-0</td> </tr> </table>	Flaps up	+4.4		-1.8	Flaps down	+2		-0
Flaps up	+4.4								
	-1.8								
Flaps down	+2								
	-0								
<u>C.G. Range:</u>	<p>Forward limit: 0.22 m @ 580 kgs (8.7" @ 1278 lbs)  Intermediate limit: 0.32 m @ 800 kg (12.6" @ 1764 lbs).  Aft Limit: 0.46 m @ 800 kg (18.1" @ 1764 lbs)  Straight line variation between points given.</p>								
<u>Empty Weight C.G. Range:</u>	None.								
<u>Datum:</u>	Wing leading edge rib No. 5.								
<u>Leveling means:</u>	Fuselage upper longeron (longitudinal) and seat back frame (lateral).								
<u>Maximum Weight:</u>	<p>Maximum Take-off: 800 kgs (1764 lbs)  Maximum Landing: 800 kgs (1764 lbs)</p>								
<u>Minimum Crew:</u>	One								
<u>Number of seats:</u>	Two at Station +0.45 m (+ 17.7")								
<u>Maximum Baggage:</u>	35 kg @ +1.20 m (+ 47.2").								
<u>Fuel Capacity:</u>	<p>Total: 120 litres (31.7 US gal)  Useable: 118 litres (31 US gal)</p>								
<u>Oil Capacity:</u>	7.5 litres ( 8 US qts).								

<u>Control Surface Movements:</u>	Stabilator:	Up	10°±0.5°
		Down	12.5°± 0.5 °
	Stabilator up tab:	Up	33.5°± 3°
		Down	5°± 3°
	Stabilator down tab:	Up	14°± 3°
		Down	22°± 3°
	Rudder relative to fin:	Right	30°+ 0°
			- 3°
		Left	30° +0°
			- 3°
	Ailerons relative to wing:	Up	18°± 1.5°
		Down	12°± 1.5°
	Flaps relative to wing:	Up	0°
		Take-off	10°± 2.5°
Landing		30°± 2.5°	
If modification 17 installed		Landing	20°± 2.5°

Flight Manual

CAA Approved Flight Manual AIR 2965 (Serial numbers up to 330)  
 CAA Approved Flight Manual AIR 2966 (Serial numbers 331 to 378)  
 (See Note 8)

Serial Numbers Eligible:

001 through 378 (See Note 5)

**V - Model HR200-100S (Utility Category) Approved 19.11.1975**

This model is identical to the HR200-100 except it has no wheel and fin fairings and the spinner is replaced by a hub plate.

<u>Engine:</u>	Lycoming O-235-H2C (E-223)	
<u>Fuel:</u>	80/87 minimum aviation grade gasoline	
<u>Engine Limits:</u>	For all operations 2600 rpm (108 HP)	
<u>Propeller:</u>	Hoffmann HO-14-178/115 (LBA 32.110/001)	
<u>Propeller Limits:</u>	Minimum Static RPM @ sea level	2300
	Hoffmann: Diameter 1.78m (70") minimum 1.73m (68")	
<u>Airspeed Limits:</u>	V <sub>NE</sub> Never exceed	160 kts (296 km/h)IAS
	V <sub>NO</sub> Max. structural cruising	131 kts (242 km/h)IAS
	V <sub>A</sub> Maneuvering	131 kts (242 km/h)IAS
	V <sub>FE</sub> Max Flap Extended	96 kts (176 km/h)IAS

Design Limit Load Factors

Flaps up	+4.4
	-1.8
Flaps down	+2
	-0

C.G. Range:

Forward limit: 0.22 m @ 580 kgs (8.7" @ 1278 lbs)  
 Intermediate limit: 0.35 m @ 780 kg (13.8" @ 1720 lbs).  
 Aft Limit: 0.45 m @ 780 kg (17.7" @ 1720 lbs)  
 Straight line variation between points given.

<u>Empty Weight C.G. Range:</u>	None.		
<u>Datum:</u>	Wing leading edge rib No. 5.		
<u>Leveling means:</u>	Fuselage upper longeron (longitudinal) and seat back frame (lateral).		
<u>Maximum Weight:</u>	Maximum Take-off:	780 kgs	(1720 lbs)
	Maximum Landing:	780 kgs	(1720 lbs)
<u>Minimum Crew:</u>	One		
<u>Number of seats:</u>	Two at Station +0.45 m (+ 17.7")		
<u>Maximum Baggage:</u>	35 kg @ +1.20 m (+ 47.2").		
<u>Fuel Capacity:</u>	Total:	120 litres	(31.7 US gal)
	Useable:	118 litres	(31 US gal)
<u>Oil Capacity:</u>	5.7 litres ( 6 US qts).		
<u>Control Surface Movements:</u>	Stabilator:	Up	10°±0.5°
		Down	12.5°± 0.5 °
	Stabilator up tab:	Up	33.5°± 3°
		Down	5°± 3°
	Stabilator down tab:	Up	14°± 3°
		Down	22°± 3°
	Rudder relative to fin:	Right	30°+ 0°
			- 3°
		Left	30° +0°
			- 3°
	Ailerons relative to wing:	Up	18°± 1.5°
		Down	12°± 1.5°
	Flaps relative to wing:	Up	0°
		Take-off	10°± 2.5°
		Landing	20°± 2.5°
<u>Flight Manual</u>	CAA Approved Flight Manual AIR 2961 (See Note 8)		
<u>Serial Numbers Eligible:</u>	001 through 378 (See Note 5)		

**VI - Model R2160 (Acrobatic and Utility categories) Approved 14.06.1977**

This model is identical to the HR200-160 except it has a new wing section, ailerons and flaps, authorised propellers, enlarged rudder and keel, Acrobatic category, revised weight and balance, and miscellaneous technological improvements.

<u>Engine:</u>	Lycoming O-320-D (E-274)		
<u>Fuel:</u>	100LL minimum aviation grade gasoline		
<u>Engine Limits:</u>	For all operations 2700 rpm (160 HP)		
	Maximum normal operating rate	2600 rpm	(s/n 001 to 378)
<u>Propeller:</u>	Sensenich 74DM6S5-2-66	(P-886)	(Serial numbers 001 to 378)
	or	74DM6S5-2-64	(All serial numbers)

<u>Propeller Limits:</u>	Minimum Static RPM @ sea level	2150
	Diameter 1.83m (72") No reduction permitted	
<u>Airspeed Limits:</u>	V <sub>NE</sub> Never exceed	178 kts (331 km/h)IAS
	V <sub>NO</sub> Max. structural cruising	127 kts (236 km/h)IAS
	V <sub>A</sub> Maneuvering	127 kts (236 km/h)IAS
	V <sub>FE</sub> Max Flap Extended	97 kts (180 km/h)IAS
<u>Design Limit Load Factors</u>	Acrobatic (800 kg MAUW)	
	Flaps up	+6
		-3
	Flaps down	+2
		-0
	Utility (900 kg MAUW)	
	Flaps up	+4.4
		-1.8
	Flaps down	+2
		-0
<u>C.G. Range:</u>	<b>Acrobatic</b>	
	Forward limit: 0.23 m @ 700 kgs (9.1" @ 1543 lbs)	
	Intermediate limit: 0.33 m @ 800 kg (13" @ 1764 lbs).	
	Aft Limit: 0.42 m @ 800 kg (16.5" @ 1764 lbs)	
	<b>Utility</b>	
	Forward limit: 0.23 m @ 700 kgs (9.1" @ 1543 lbs)	
	Intermediate limit: 0.33 m @ 900 kg (13" @ 1984 lbs).	
	Aft Limit: 0.48 m @ 900 kg (18.9" @ 1984 lbs)	
	Straight line variation between points given.	
<u>Empty Weight C.G. Range:</u>	None.	
<u>Datum:</u>	Wing leading edge rib No. 5.	
<u>Leveling means:</u>	Fuselage upper longeron (longitudinal) and seat back frame (lateral).	
<u>Maximum Weight:</u>	<b>Acrobatic</b>	
	Maximum Take-off: 800 kgs (1764 lbs)	
	Maximum Landing: 800 kgs (1764 lbs)	
	<b>Utility</b>	
	Maximum Take-off: 900 kgs (1984 lbs)	
	Maximum Landing: 900 kgs (1984 lbs)	
<u>Minimum Crew:</u>	One	
<u>Number of seats:</u>	Two at Station +0.46 m (+ 18.1")	
<u>Maximum Baggage:</u>	35 kg @ +1.21 m (+ 47.6"). None permitted for acrobatics.	

Fuel Capacity: Total: 120 litres (31.7 US gal) (Standard for s/n 001 through 378)  
Useable: 118 litres (31 US gal)

Total: 160 litres (42.2 US gal) (Optional for s/n 001 through 378,  
Useable: 158 litres (41.7 US gal) (Standard for s/n 160A-06001 up)

Oil Capacity: 7.5 litres ( 8 US qts).

Control Surface Movements:

Stabilator:	Up	10°±0.5°
	Down	12.5°± 0.5 °
Stabilator up tab:	Up	33.5°± 3°
	Down	5°± 3°
Stabilator down tab:	Up	14°± 3°
	Down	22°± 3°
Rudder relative to fin:	Right	30°± 2°
	Left	30°± 2°
Ailerons relative to wing:	Up	20°± 1.5°
	Down	15°± 1.5°
Flaps relative to wing:	Up	0°
	Take-off	10°±
	Landing	35°± 2°

Flight Manual CAA Approved Flight Manual AIR 2702 (Serial numbers 001 to 378)  
(See Note 8)  
CAA Approved Flight Manual AIR 3001 (Serial numbers 160A-06001 and up.)

Drawing List AAD Drawing No 60-00-001 (Serial numbers 160A-06001 and up)

Serial Numbers Eligible: 001 through 378 (See Notes 5 and 6)  
160A-06001 to 160A-07014, 160A-0015 to 0018 (See Note 7)

### **VII - Model R2100 (Utility and Acrobatic categories) Approved 13.09.1977**

This model is identical to the R2160 except it is fitted with a Lycoming O-235-H2C engine, Acrobatic category, the spinner is replaced by a hub plate and no wheel or landing gear fairings if a McCauley 1A-105BCM 70-56 propeller is fitted. Nose Oleo strut pressure is 3 bar.

Engine: Lycoming O-235-H2C (E-223)

Fuel: 80/87 minimum aviation grade gasoline

Engine Limits: For all operations 2600 rpm (108 HP)

Propeller:

1. McCauley 1A 105/BCM-70-56 (P-918)
2. Hoffmann HO-14-178/115 (Wheel & landing gear fairings and spinner are mandatory) (LBA 32.110/001)

Propeller Limits: Minimum Static RPM @ sea level 2300  
 McCauley: Diameter 1.78m (70") Minimum 1.70m (67")  
 Hoffmann: Diameter 1.78m (70") minimum 1.73m (68")

Airspeed Limits:

V <sub>NE</sub> Never exceed	178.5 kts (331 km/h)IAS
V <sub>NO</sub> Max. structural cruising	127 kts (236 km/h)IAS
V <sub>A</sub> Maneuvering	127 kts (236 km/h)IAS
V <sub>FE</sub> Max Flap Extended	97 kts (180 km/h)IAS

Design Limit Load Factors

Acrobatic (760 kg MAUW)	
Flaps up	+6
	-3
Flaps down	+2
	-0
Utility (760 kg MAUW)	
Flaps up	+4.4
	-1.8
Flaps down	+2
	-0

C.G. Range:

**Acrobatic**  
 Forward limit: 0.28 m @ 700 kgs (11" @ 1543 lbs)  
 Intermediate limit: 0.38 m @ 760 kg (15" @ 1675 lbs).  
 Aft Limit: 0.46 m @ 760 kg (18.1" @ 1675 lbs)

**Utility**  
 Forward limit: 0.28 m @ 700 kgs (11" @ 1543 lbs)  
 Intermediate limit: 0.38 m @ 760 kg (15" @ 1675 lbs).  
 Aft Limit: 0.48 m @ 760 kg (18.9" @ 1675 lbs)

Straight line variation between points given.

Empty Weight C.G. Range: None.

Datum: Wing leading edge rib No. 5.

Leveling means: Fuselage upper longeron (longitudinal) and seat back frame (lateral).

Maximum Weight: **Acrobatic and Utility**  
 Maximum Take-off: 760 kgs (1675 lbs)  
 Maximum Landing: 760 kgs (1675 lbs)

Minimum Crew: One

Number of seats: Two at Station +0.46 m (+ 18.1")

Maximum Baggage: 35 kg @ +1.21 m (+ 47.6"). None permitted for aerobatics.

Fuel Capacity:  
 Total: 120 litres (31.7 US gal)  
 Useable: 118 litres (31 US gal)

Oil Capacity: 5.7 litres ( 6 US qts).

<u>Control Surface Movements:</u>	Stabilator:	Up	10°±0.5°
		Down	12.5°± 0.5 °
	Stabilator up tab:	Up	33.5°± 3°
		Down	5°± 3°
	Stabilator down tab:	Up	14°± 3°
		Down	22°± 3°
	Rudder relative to fin:	Right	30°± 2°
		Left	30°± 2°
	Ailerons relative to wing:	Up	20°± 1.5°
		Down	15°± 1.5°
	Flaps relative to wing:	Up	0°
		Take-off	10°±
Landing		35°± 2°	

Flight Manual CAA Approved Flight Manual AIR 2967 (See Note 8)

Serial Numbers Eligible: 001 through 378 (See Note 5)

### **VIII - Model R2100A (Acrobatic and Utility categories) Approved 29.11.1977**

This model is identical to the R2100 except for authorised propellers, increased weight, mandatory wheel and landing gear fairings, mandatory spinner.

Engine: Lycoming O-235-H2C (E-223)

Fuel: 80/87 minimum aviation grade gasoline

Engine Limits: For all operations 2600 rpm (108 HP)

Propeller: McCauley 1A 105/BCM-70-56 (P-918)

Propeller Limits: Minimum Static RPM @ sea level 2300  
Diameter 1.78m (70") Minimum 1.70m (67")

<u>Airspeed Limits:</u>	V <sub>NE</sub> Never exceed	178.5 kts (331 km/h)IAS
	V <sub>NO</sub> Max. structural cruising	127 kts (236 km/h)IAS
	V <sub>A</sub> Maneuvering	127 kts (236 km/h)IAS
	V <sub>FE</sub> Max Flap Extended	97 kts (180 km/h)IAS

<u>Design Limit Load Factors</u>	Acrobatic (775 kg MAUW)	
	Flaps up	+6
		-3
	Flaps down	+2
		-0
	Utility (775 kg MAUW)	
	Flaps up	+4.4
		-1.8
	Flaps down	+2
		-0

<u>C.G. Range:</u>	<b>Acrobatic</b>		
	Forward limit: 0.28 m @ 700 kgs (11" @ 1543 lbs)		
	Intermediate limit: 0.38 m @ 775 kg (15" @ 1708 lbs).		
	Aft Limit: 0.46 m @ 775 kg (18.1" @ 1708 lbs)		
	<b>Utility</b>		
	Forward limit: 0.28 m @ 700 kgs (11" @ 1543 lbs)		
	Intermediate limit: 0.38 m @ 775 kg (15" @ 1708 lbs).		
	Aft Limit: 0.48 m @ 775 kg (18.9" @ 1708 lbs)		
	Straight line variation between points given.		
<u>Empty Weight C.G. Range:</u>	None.		
<u>Datum:</u>	Wing leading edge rib No. 5.		
<u>Leveling means:</u>	Fuselage upper longeron (longitudinal) and seat back frame (lateral).		
<u>Maximum Weight:</u>	<b>Acrobatic and Utility</b>		
	Maximum Take-off: 775 kgs (1708 lbs)		
	Maximum Landing: 775 kgs (1708 lbs)		
<u>Minimum Crew:</u>	One		
<u>Number of seats:</u>	Two at Station +0.46 m (+ 18.1")		
<u>Maximum Baggage:</u>	35 kg @ +1.21 m (+ 47.6"). None permitted for acrobatics.		
<u>Fuel Capacity:</u>	Total: 120 litres (31.7 US gal)		
	Useable: 118 litres (31 US gal)		
<u>Oil Capacity:</u>	5.7 litres ( 6 US qts).		
<u>Control Surface Movements:</u>	Stabilator:	Up	10°±0.5°
		Down	12.5°± 0.5 °
	Stabilator up tab:	Up	33.5°± 3°
		Down	5°± 3°
	Stabilator down tab:	Up	14°± 3°
		Down	22°± 3°
	Rudder relative to fin:	Right	30°± 2°
		Left	30°± 2°
	Ailerons relative to wing:	Up	20°± 1.5°
		Down	15°± 1.5°
	Flaps relative to wing:	Up	0°
		Take-off	10°±
		Landing	35°± 2°
<u>Flight Manual</u>	CAA Approved Flight Manual AIR 2968 (See Note 8)		
<u>Serial Numbers Eligible:</u>	001 through 378 (See Note 5)		

**IX - Model R2160D (Acrobatic category) Approved 25.04.1978**

This model is identical to the R2160 except maximum engine speed is limited to 2600 rpm to meet noise abatement regulations in Germany.

<u>Engine:</u>	Lycoming O-320-D (E-274)																				
<u>Fuel:</u>	100LL minimum aviation grade gasoline																				
<u>Engine Limits:</u>	For all operations 2600 rpm Limitation of 2600 rpm to meet German noise abatement regulations, not airworthiness requirements.																				
<u>Propeller:</u>	Sensenich 74DM6S5-2-66 (P-886) or 74DM6S5-2-64																				
<u>Propeller Limits:</u>	Minimum Static RPM @ sea level 2150 Diameter 1.83m (72") No reduction permitted																				
<u>Airspeed Limits:</u>	<table> <tr> <td>V<sub>NE</sub> Never exceed</td> <td>178.5 kts (331 km/h)IAS</td> </tr> <tr> <td>V<sub>NO</sub> Max. structural cruising</td> <td>127 kts (236 km/h)IAS</td> </tr> <tr> <td>V<sub>A</sub> Maneuvering</td> <td>127 kts (236 km/h)IAS</td> </tr> <tr> <td>V<sub>FE</sub> Max Flap Extended</td> <td>97 kts (180 km/h)IAS</td> </tr> </table>	V <sub>NE</sub> Never exceed	178.5 kts (331 km/h)IAS	V <sub>NO</sub> Max. structural cruising	127 kts (236 km/h)IAS	V <sub>A</sub> Maneuvering	127 kts (236 km/h)IAS	V <sub>FE</sub> Max Flap Extended	97 kts (180 km/h)IAS												
V <sub>NE</sub> Never exceed	178.5 kts (331 km/h)IAS																				
V <sub>NO</sub> Max. structural cruising	127 kts (236 km/h)IAS																				
V <sub>A</sub> Maneuvering	127 kts (236 km/h)IAS																				
V <sub>FE</sub> Max Flap Extended	97 kts (180 km/h)IAS																				
<u>Design Limit Load Factors</u>	<table> <tr> <td colspan="2">Acrobatic (800 kg MAUW)</td> </tr> <tr> <td>Flaps up</td> <td>+6</td> </tr> <tr> <td></td> <td>-3</td> </tr> <tr> <td>Flaps down</td> <td>+2</td> </tr> <tr> <td></td> <td>-0</td> </tr> <tr> <td colspan="2">Utility (900 kg MAUW)</td> </tr> <tr> <td>Flaps up</td> <td>+4.4</td> </tr> <tr> <td></td> <td>-1.8</td> </tr> <tr> <td>Flaps down</td> <td>+2</td> </tr> <tr> <td></td> <td>-0</td> </tr> </table>	Acrobatic (800 kg MAUW)		Flaps up	+6		-3	Flaps down	+2		-0	Utility (900 kg MAUW)		Flaps up	+4.4		-1.8	Flaps down	+2		-0
Acrobatic (800 kg MAUW)																					
Flaps up	+6																				
	-3																				
Flaps down	+2																				
	-0																				
Utility (900 kg MAUW)																					
Flaps up	+4.4																				
	-1.8																				
Flaps down	+2																				
	-0																				
<u>C.G. Range:</u>	<p><b>Acrobatic</b> Forward limit: 0.23 m @ 700 kgs (9.1" @ 1543 lbs) Intermediate limit: 0.33 m @ 800 kg (13" @ 1764 lbs). Aft Limit: 0.42 m @ 800 kg (16.5" @ 1764 lbs)</p> <p><b>Utility</b> Forward limit: 0.23 m @ 700 kgs (9.1" @ 1543 lbs) Intermediate limit: 0.33 m @ 900 kg (13" @ 1984 lbs). Aft Limit: 0.48 m @ 900 kg (18.9" @ 1984 lbs)</p> <p>Straight line variation between points given.</p>																				
<u>Empty Weight C.G. Range:</u>	None.																				
<u>Datum:</u>	Wing leading edge rib No. 5.																				
<u>Leveling means:</u>	Fuselage upper longeron (longitudinal) and seat back frame (lateral).																				

<u>Maximum Weight:</u>	<b>Acrobatic</b> Maximum Take-off: 800 kgs (1764 lbs) Maximum Landing: 800 kgs (1764 lbs)																																							
	<b>Utility</b> Maximum Take-off: 900 kgs (1984 lbs) Maximum Landing: 900 kgs (1984 lbs)																																							
<u>Minimum Crew:</u>	One																																							
<u>Number of seats:</u>	Two at Station +0.46 m (+ 18.1'')																																							
<u>Maximum Baggage:</u>	35 kg @ +1.21 m (+ 47.6''). None permitted for acrobatics.																																							
<u>Fuel Capacity:</u>	Total: 120 litres (31.7 US gal) Useable: 118 litres (31 US gal)																																							
<u>Oil Capacity:</u>	7.5 litres ( 8 US qts).																																							
<u>Control Surface Movements:</u>	<table border="0"> <tr> <td>Stabilator:</td> <td>Up</td> <td>10°±0.5°</td> </tr> <tr> <td></td> <td>Down</td> <td>12.5°± 0.5 °</td> </tr> <tr> <td>Stabilator up tab:</td> <td>Up</td> <td>33.5°± 3°</td> </tr> <tr> <td></td> <td>Down</td> <td>5°± 3°</td> </tr> <tr> <td>Stabilator down tab:</td> <td>Up</td> <td>14°± 3°</td> </tr> <tr> <td></td> <td>Down</td> <td>22°± 3°</td> </tr> <tr> <td>Rudder relative to fin:</td> <td>Right</td> <td>30°± 2°</td> </tr> <tr> <td></td> <td>Left</td> <td>30°± 2°</td> </tr> <tr> <td>Ailerons relative to wing:</td> <td>Up</td> <td>20°± 1.5°</td> </tr> <tr> <td></td> <td>Down</td> <td>15°± 1.5°</td> </tr> <tr> <td>Flaps relative to wing:</td> <td>Up</td> <td>0°</td> </tr> <tr> <td></td> <td>Take-off</td> <td>10°±</td> </tr> <tr> <td></td> <td>Landing</td> <td>35°± 2°</td> </tr> </table>	Stabilator:	Up	10°±0.5°		Down	12.5°± 0.5 °	Stabilator up tab:	Up	33.5°± 3°		Down	5°± 3°	Stabilator down tab:	Up	14°± 3°		Down	22°± 3°	Rudder relative to fin:	Right	30°± 2°		Left	30°± 2°	Ailerons relative to wing:	Up	20°± 1.5°		Down	15°± 1.5°	Flaps relative to wing:	Up	0°		Take-off	10°±		Landing	35°± 2°
Stabilator:	Up	10°±0.5°																																						
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Rudder relative to fin:	Right	30°± 2°																																						
	Left	30°± 2°																																						
Ailerons relative to wing:	Up	20°± 1.5°																																						
	Down	15°± 1.5°																																						
Flaps relative to wing:	Up	0°																																						
	Take-off	10°±																																						
	Landing	35°± 2°																																						
<u>Flight Manual</u>	CAA Approved Flight Manual AIR 2973 (See Note 8)																																							
<u>Serial Numbers Eligible:</u>	001 through 378 (See Note 5)																																							
<b><u>X - Model R2112 (Acrobatic and Utility Category) Approved 03.07.1979</u></b>																																								
This model is identical to the R2100 except it is fitted with a Lycoming O-235-L engine, authorised propellers, increased weight, revised air intake system.																																								
<u>Engine:</u>	Lycoming O-235-L2A or -L2C (E-223)																																							
<u>Fuel:</u>	100LL minimum aviation grade gasoline																																							
<u>Engine Limits:</u>	For all operations 2600 rpm (112 HP)																																							
<u>Propeller:</u>	Sensenich: 72CKS6-0-52 (P-904) or 72CKS6-0-56																																							

Propeller Limits: Minimum Static RPM @ sea level (052) 2350  
(056) 2250  
Diameter 1.83m (72") Minimum 1.78 (70")

Airspeed Limits:  
V<sub>NE</sub> Never exceed 156.5 kts (290 km/h)IAS  
V<sub>NO</sub> Max. structural cruising 127 kts (236 km/h)IAS  
V<sub>A</sub> Maneuvering 127 kts (236 km/h)IAS  
V<sub>FE</sub> Max Flap Extended 97 kts (180 km/h)IAS

Design Limit Load Factors  
Acrobatic (800 kg MAUW)  
Flaps up +6  
-3  
Flaps down +2  
-0  
Utility (800 kg MAUW)  
Flaps up +4.4  
-1.8  
Flaps down +2  
-0

C.G. Range:  
**Acrobatic**  
Forward limit: 0.28 m @ 700 kgs (11" @ 1543 lbs)  
Intermediate limit: 0.38 m @ 800 kg (15" @ 1764 lbs).  
Aft Limit: 0.46 m @ 800 kg (18.1" @ 1764 lbs)

**Utility**  
Forward limit: 0.28 m @ 700 kgs (11" @ 1543 lbs)  
Intermediate limit: 0.38 m @ 800 kg (15" @ 1764 lbs).  
Aft Limit: 0.48 m @ 800 kg (18.9" @ 1764 lbs)  
Straight line variation between points given.

Empty Weight C.G. Range: None.

Datum: Wing leading edge rib No. 5.

Leveling means: Fuselage upper longeron(longitudinal) and seat back frame (lateral).

Maximum Weight:  
**Acrobatic and Utility**  
Maximum Take-off: 800 kgs (1764 lbs)  
Maximum Landing: 800 kgs (1764 lbs)

Minimum Crew: One

Number of seats: Two at Station +0.46 m (+ 18.1")

Maximum Baggage: 35 kg @ +1.21 m (+ 47.6"). None permitted for acrobatics.

Fuel Capacity:  
Total: 120 litres (31.7 US gal)  
Useable: 118 litres (31 US gal)

Oil Capacity: 5.7 litres ( 6 US qts).

<u>Control Surface Movements:</u>	Stabilator:	Up	10°±0.5°
		Down	12.5°± 0.5 °
	Stabilator up tab:	Up	33.5°± 3°
		Down	5°± 3°
	Stabilator down tab:	Up	14°± 3°
		Down	22°± 3°
	Rudder relative to fin:	Right	30°± 2°
		Left	30°± 2°
	Ailerons relative to wing:	Up	20°± 1.5°
		Down	15°± 1.5°
	Flaps relative to wing:	Up	0°
		Take-off	10°±
		Landing	35°± 2°

Flight Manual

CAA Approved Flight Manual AIR 2969 (See Note 8)

Serial Numbers Eligible:

001 through 378 (See Note 5)

**XI - Model R2160i (Acrobatic and Utility Categories) Approved 08.07.1998**

This model is identical to the R2160 except it is fitted with a Lycoming AEIO-320-D2B engine, inverted fuel and oil systems.

<u>Engine:</u>	Lycoming AEIO-320-D2B (1E12)
<u>Fuel:</u>	100LL minimum aviation grade gasoline
<u>Engine Limits:</u>	For all operations 2700 rpm (160 HP)
<u>Propeller:</u>	Sensenich 74DM7S5-2-66 (P-886) (Serial numbers 001 to 378)
	or 74DM7S5-2-64 (All serial numbers)
<u>Propeller Limits:</u>	Minimum Static RPM @ sea level 2150 Diameter 1.83m (72") No reduction permitted
<u>Airspeed Limits:</u>	V <sub>NE</sub> Never exceed 178.5 kts (331 km/h)IAS
	V <sub>NO</sub> Max. structural cruising 127 kts (236 km/h)IAS
	V <sub>A</sub> Maneuvering 127 kts (236 km/h)IAS
	V <sub>FE</sub> Max Flap Extended 97 kts (180 km/h)IAS
<u>Design Limit Load Factors</u>	Acrobatic (800 kg MAUW)
	Flaps up +6
	-3
	Flaps down +2
	-0
	Utility (900 kg MAUW)
	Flaps up +4.4
	-1.8
	Flaps down +2
	-0

C.G. Range:**Acrobatic**

Forward limit: 0.23 m @ 700 kgs (9.1" @ 1543 lbs)

Intermediate limit: 0.33 m @ 800 kgs (13" @ 1764 lbs).

Aft Limit: 0.42 m @ 800 kg (16.5" @ 1764 lbs)

**Utility**

Forward limit: 0.23 m @ 700 kgs (9.1" @ 1543 lbs)

Intermediate limit: 0.33 m @ 900 kgs (13" @ 1984 lbs).

Aft Limit: 0.48 m @ 900 kg (18.9" @ 1984 lbs)

Straight line variation between points given.

Empty Weight C.G. Range:

None.

Datum:

Wing leading edge rib No. 5.

Leveling means:

Fuselage upper longeron (longitudinal) and seat back frame (lateral).

Maximum Weight:**Acrobatic**

Maximum Take-off: 800 kgs (1764 lbs)

Maximum Landing: 800 kgs (1764 lbs)

**Utility**

Maximum Take-off: 900 kgs (1984 lbs)

Maximum Landing: 900 kgs (1984 lbs)

Minimum Crew:

One

Number of seats:

Two at Station +0.46 m (+ 18.1")

Maximum Baggage:

35 kg @ +1.21 m (+ 47.6"). None permitted for acrobatics.

Fuel Capacity:

Total: 120 litres (31.7 US gal) (Standard s/n 001 to 378)

Useable: 118 litres (31 US gal)

Total: 160 litres (42.2 US gals) (Optional s/n 001 to 378)

Useable: 158 litres (41.7 US gals)(Standard s/n 160Ai-07007 and up)

Oil Capacity:

7.5 litres ( 8 US qts).

Control Surface Movements:

Stabilator:	Up	10°±0.5°
	Down	12.5°± 0.5 °
Stabilator up tab:	Up	33.5°± 3°
	Down	5°± 3°
Stabilator down tab:	Up	14°± 3°
	Down	22°± 3°
Rudder relative to fin:	Right	30°± 2°
	Left	30°± 2°
Ailerons relative to wing:	Up	20°± 1.5°
	Down	15°± 1.5°
Flaps relative to wing:	Up	0°
	Take-off	10°±
	Landing	35°± 2°

<u>Flight Manual</u>	CAA Approved Flight Manual AIR 2846 (Serial numbers 001 to 378) (See Note 8)
	CAA Approved Flight Manual AIR 3002 (Serial numbers 160Ai-07007 and up.)
<u>Drawing List</u>	AAD Drawing No 61-00-001 (Serial numbers 160Ai-07007 and up)
<u>Serial Numbers Eligible:</u>	001 through 378 (See Notes 5 and 6) 160Ai-07007, 160Ai-0008 (See Note 7)

### **XII - Model R2120U (Utility category) Approved 18.05.2001**

This model is identical to the R2112 except Utility category only, small rudder and no keel, Lycoming O-235-L2A, propeller authorizations, no wheel or landing gear fairings. Aft C of G limited to 28% MAC

<u>Engine:</u>	Lycoming O-235-L2A (E-223)								
<u>Fuel:</u>	100LL minimum aviation grade gasoline								
<u>Engine Limits:</u>	For all operations 2800 rpm (118 HP)								
<u>Propeller:</u>	Sensenich: 72CK56-0-54 (P-904)								
<u>Propeller Limits:</u>	Minimum Static RPM @ sea level 2300 Diameter 1.83m (72") No reduction permitted								
<u>Airspeed Limits:</u>	<table> <tr> <td>V<sub>NE</sub> Never exceed</td> <td>156.5 kts (290 km/h)IAS</td> </tr> <tr> <td>V<sub>NO</sub> Max. structural cruising</td> <td>127 kts (236 km/h)IAS</td> </tr> <tr> <td>V<sub>A</sub> Maneuvering</td> <td>127 kts (236 km/h)IAS</td> </tr> <tr> <td>V<sub>FE</sub> Max Flap Extended</td> <td>97 kts (180 km/h)IAS</td> </tr> </table>	V <sub>NE</sub> Never exceed	156.5 kts (290 km/h)IAS	V <sub>NO</sub> Max. structural cruising	127 kts (236 km/h)IAS	V <sub>A</sub> Maneuvering	127 kts (236 km/h)IAS	V <sub>FE</sub> Max Flap Extended	97 kts (180 km/h)IAS
V <sub>NE</sub> Never exceed	156.5 kts (290 km/h)IAS								
V <sub>NO</sub> Max. structural cruising	127 kts (236 km/h)IAS								
V <sub>A</sub> Maneuvering	127 kts (236 km/h)IAS								
V <sub>FE</sub> Max Flap Extended	97 kts (180 km/h)IAS								
<u>Design Limit Load Factors</u>	<table> <tr> <td>Flaps up</td> <td>+4.4</td> </tr> <tr> <td></td> <td>-1.8</td> </tr> <tr> <td>Flaps down</td> <td>+2</td> </tr> <tr> <td></td> <td>-0</td> </tr> </table>	Flaps up	+4.4		-1.8	Flaps down	+2		-0
Flaps up	+4.4								
	-1.8								
Flaps down	+2								
	-0								
<u>C.G. Range:</u>	<p>Forward limit: 0.28 m @ 700 kgs (11" @ 1543 lbs)  Intermediate limit: 0.38 m @ 800 kg (15" @ 1764 lbs).  Aft Limit: 0.44 m @ 800 kg (17.3" @ 1764 lbs)</p> <p>Straight line variation between points given.</p>								
<u>Empty Weight C.G. Range:</u>	None.								
<u>Datum:</u>	Wing leading edge rib No. 5.								
<u>Leveling means:</u>	Fuselage upper longeron (longitudinal) and seat back frame (lateral).								
<u>Maximum Weight:</u>	Maximum Take-off: 800 kgs (1764 lbs) Maximum Landing: 800 kgs (1764 lbs)								
<u>Minimum Crew:</u>	One								
<u>Number of seats:</u>	Two at Station +0.46 m (+ 18.1")								

<u>Maximum Baggage:</u>	35 kg @ +1.21 m (+ 47.6"). None permitted for aerobatics.		
<u>Fuel Capacity:</u>	Total: 120 litres (31.7 US gal) Useable: 118 litres (31 US gal)		
<u>Oil Capacity:</u>	5.7 litres ( 6 US qts).		
<u>Control Surface Movements:</u>	Stabilator:	Up	10°±0.5°
		Down	12.5°± 0.5 °
	Stabilator up tab:	Up	33.5°± 3°
		Down	5°± 3°
	Stabilator down tab:	Up	14°± 3°
		Down	22°± 3°
	Rudder relative to fin:	Right	30°± 2°
		Left	30°± 2°
	Ailerons relative to wing:	Up	20°± 1.5°
		Down	15°± 1.5°
	Flaps relative to wing:	Up	0°
		Take-off	10°±
		Landing	35°± 2°
<u>Flight Manual</u>	CAA Approved Flight Manual AIR 2748 (Serial numbers 001 through 378) (See Note 8) CAA Approved Flight Manual AIR 3000 (Serial numbers 120T-0001 and up)		
<u>Drawing List</u>	AAD Drawing No 20-00-001 (Serial numbers 120T-0001 and up)		
<u>Serial Numbers Eligible:</u>	001 through 378 (See Note 5) 120T-0001 and 0002 (See Note 7)		

### **DATA PERTINENT TO ALL AIRCRAFT**

<u>Certification Basis:</u>	<p><u>Aircraft manufactured prior to June 2006:</u></p> <p>Federal Aviation Regulations Part 23 dated 1 February 1965 as amended by amendment 23-1 through 23-9 dated 17 June 1970. Supplementary technical requirements from AIR 2052A paragraphs 3.397 and 3.399. Special technical requirement: "Forward sliding canopy must be jettisonable".</p> <p><u>Aircraft manufactured after June 2006:</u></p> <p>i) For the basic aircraft:</p> <p>Federal Aviation Regulations Part 23 dated 1 February 1965 as amended by amendment 23-1 through 23-9 dated 17 June 1970. Federal Aviation Regulations Part 36 dated 1 December 1969 as amended by amendment 36-1 through 36-9 dated 3 April 1978. Supplementary technical requirements from AIR 2052A paragraphs 3.397 and 3.399. Special technical requirement: "Forward sliding canopy must be jettisonable".</p>
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ii) For models approved after June 2006, and significant major design changes approved after June 2006:

Federal Aviation Regulations Part 23 dated 1 February 1965 as amended by amendment 23-1 through 23-55 dated 1 March 2002.

Federal Aviation Regulations Part 36 dated 1 December 1969 as amended by amendment 36-1 through 34-24 dated 7 August 2002.

Supplementary technical requirements from AIR 2052A paragraphs 3.397 and 3.399.

Special technical requirement: "Forward sliding canopy must be jettisonable".

Equipment:

The basic required equipment as prescribed in the applicable airworthiness regulations (see certification basis) must be installed in the aircraft for airworthiness certification.

The applicable CAA approved Flight Manual is required for all operations. Included within the Flight Manual is information in the form of supplements which cover installation of optional systems and equipment that are necessary for safe operation of the aircraft.

NOTE 1 Current weight and balance report, including list of equipment included in certified empty weight must be provided for each aircraft at the time of original airworthiness certification and at all times thereafter. Loading instructions are included in the applicable CAA approved Flight Manual.

NOTE 2 (a) Placards and instrument markings must be displayed in accordance with the applicable CAA approved Flight Manual including relevant supplements.

(b) Each aircraft must have a placard in clear view of the pilot that specifies the kind of operations such as VFR DAY or VFR NIGHT, to which the operation of the aircraft is limited by the equipment installed, and also that flight in known icing conditions is prohibited.

NOTE 3 Instructions for continuing airworthiness of the aircraft are contained in:

Aircraft manufactured prior to June 2006:

HR200 series aircraft: Alpha Aviation HR200 Service Manual s/n 001 to 378

R2000 series aircraft: Alpha Aviation R2000 Service Manual s/n 001 to 378

Aircraft manufactured after June 2006:

Alpha Aviation Service Manual for the R2000 series s/n 160A-06001 and up. Service Life limits of components are given in Section 3, Time Limits & Maintenance Instructions.

NOTE 4 This Type Certificate is issued on the basis of EASA Type Certificate No 70 which has been transferred to New Zealand, and replaced by import Type Certificate EASA.IM.A.086. Aircraft up to serial number 378 were produced under EASA Type Certificate No 70 by Apex Aviation Ltd or their predecessor companies. A number of R2160 model aircraft were assembled in Canada by Avions Pierre Robins Inc under Canadian Type Certificate A-125 and are covered by this Type Certificate.

NOTE 5 Serial numbers issued by the French manufacturer (including Canadian assembled examples) were sequential regardless of model.

## NOTE 6

Aircraft assembled in Canada may have a C in front of the basic serial number.

## NOTE 7

Aircraft serial numbers 160A-06001 through 160A-0018, 120T-0001 and 120T-0002, and 160Ai-07007 160Ai-0008 were manufactured by Alpha Aviation Manufacturing Ltd under Part 148 aircraft manufacturing organisation certificate AM66328 between June 2006 and June 2008.

For serial numbers 160A-06001 through 160A-07014, and 160Ai-07007 the following format was used:

xxxx-xxxxx

The first sequence defines the Model.

160A = R2160

160Ai = R2160i

120T = R2120U

The second sequence of five numbers describes the production year (first 2 digits) and the production serial number (final three digits) which is sequential regardless of model.

For serial numbers 160A-0015 and up, 160Ai-0008 and up, and 120T-0001 and up, the production year is deleted from the serial number, and the numbers are sequential for each model.

## NOTE 8

Aircraft registered in France may continue to use the applicable French language Flight Manual specified in Apex Aircraft Service Letter No 6 Revision 18 dated March 2006.

**END**